

Name: Mr. Davis Solution Key

Simplify each expression. Give each answer without negative exponents.

$$1. \sqrt{121x^2} = 11|x|$$

$$2. \sqrt{75x^3} = \sqrt{25 \cdot 3 \cdot x^2 \cdot x} \\ = 5|x|\sqrt{3x}$$

$$3. \sqrt{500x^6y^9} = \sqrt{100 \cdot 5 \cdot x^6 \cdot y^8 \cdot y} \\ = 10|x^3|y^4\sqrt{5y}$$

$$4. \sqrt[3]{27x^3y^6} = 3xy^2$$

$$5. \sqrt[3]{250x^5y^9} = \sqrt[3]{125 \cdot 2 \cdot x^3 \cdot x^2 \cdot y^9} \\ = 5xy^3\sqrt[3]{2x^2}$$

$$6. \sqrt{5xy}\sqrt{20xy^3} = \sqrt{100x^2y^4} \\ = 10|x|y^2$$

$$\begin{aligned}
 7. \quad & \sqrt{2xy^2} \sqrt{32x^5y^7} = \\
 & = \sqrt{64x^6y^9} \\
 & = \sqrt{64x^6y^8 \cdot y} \\
 & = 8x^3y^4\sqrt{y}
 \end{aligned}$$

$$\begin{aligned}
 8. \quad & \sqrt[3]{2x^7} \sqrt[3]{4x^5} = \\
 & = \sqrt[3]{8x^{12}} \\
 & = 2x^4
 \end{aligned}$$

$$9. \quad \frac{\sqrt{45}}{\sqrt{5}} = \sqrt{\frac{45}{5}} = \sqrt{9} = 3$$

$$\begin{aligned}
 10. \quad & \frac{\sqrt{96y^{11}}}{\sqrt{3y^3}} = \sqrt{\frac{96y^{11}}{3y^3}} \\
 & = \sqrt{32y^8} \\
 & = \sqrt{16 \cdot 2 \cdot y^8} \\
 & = 4y^4\sqrt{2}
 \end{aligned}$$

$$\begin{aligned}
 11. \quad & 8\sqrt{7} + 2\sqrt{7} + 3\sqrt{6} = \\
 & = 10\sqrt{7} + 3\sqrt{6}
 \end{aligned}$$

$$\begin{aligned}
 12. \quad & \sqrt{50} + \sqrt{128} + 3\sqrt{98} = \\
 & = \sqrt{25 \cdot 2} + \sqrt{64 \cdot 2} + 3\sqrt{49 \cdot 2} \\
 & = 5\sqrt{2} + 8\sqrt{2} + 3 \cdot 7\sqrt{2} \\
 & = 13\sqrt{2} + 21\sqrt{2} \\
 & = 34\sqrt{2}
 \end{aligned}$$